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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,966	11/16/2001	Andreas Himmler	112740-377	3313

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EXAMINER

LEE, JOHN D

ART UNIT PAPER NUMBER

2874

DATE MAILED: 03/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/990,966

Applicant(s)

HIMMLER, ANDREAS

Examiner

John D. Lee

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,7 and 8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,7 and 8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11-16-01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

This Office action is responsive to applicant's amendment which was submitted on December 11, 2003. In view of the cancellation of claim 2, the previously applied rejection under 35 U.S.C. § 112, second paragraph, is withdrawn.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, 7, and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,404,952 to Danziger in view of U.S. Patent 4,415,227 to Unger. Danziger discloses an optical communication system for exciting modes in a waveguide (Figures 20a-20c) with essentially all the elements of the abovementioned claims. Regarding claim 1, Danziger discloses the device having an entry face (194) onto which a part of a coherent beam (192) of light source (3) is directed; and a reflector (190) for deflecting another part of the coherent beam of the light source onto the entry face such that an interference pattern for exciting various modes is produced (column 8, lines 59-bottom), wherein the light source lies on an optical axis of the optical waveguide. Danziger's disclosure shows that the reflector has a planar pattern for creating interference (column 9, lines 25-34), which would inherently be holographic, as set forth in claims 3, 4, 7, and 8.

Although Danziger does not explicitly state that the reflector is cone shaped, the reference shows the reflecting planes in a variety of different positions, which would strongly suggest that the planes are adjustable for exciting different modes. One of ordinary skill in the art would recognize the advantage of adjusting the planes to form a

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conical structure. Additionally, Unger discloses a cone shaped tapered waveguide for exciting modes in the optical waveguide (Figure 1 and column 2, lines 20-55). Unger also discloses that the light is reflected such that it interferes with itself (column 3, lines 45-48). Unger teaches that this cone shaped taper is advantageous, because it allows an optical signal to change modes (column 3, lines 54-bottom). Therefore, one of ordinary skill in the art at the time of applicant's invention would have found it obvious to adjust the reflecting planes of Danziger to take a conical shape.

Applicant's arguments filed on December 11, 2003, have been fully considered but they are not deemed to be persuasive. Applicant argues that the Examiner's position in the above rejection is erroneous for two different reasons. First, applicant argues that Danziger does not teach or suggest a "coherent beam" of light, alleging that the *Gaussian* beam of the reference cannot be coherent. The Examiner disagrees with this assertion. Applicant states in the remarks that a Gaussian beam, as used in Danziger, is formed of a light spectrum of different wavelengths. This is not, however, an accurate definition of the term. The term "Gaussian" refers to the shape of a curve defined by a mathematical equation, or more specifically, the distribution function that is the indefinite integral of the normal density function, which graphs out as the typical bell-shaped curve. When applied to light waves, a Gaussian distribution thereof is almost always associated with the intensity distribution of the lightwave, not the wavelength distribution thereof. It is thus incorrect to assert that Danziger's Gaussian beam is formed of a light spectrum of different wavelengths. The Examiner believes that Danziger is operating with light waves having a single wavelength but multiple possible modes. Moreover, the newly cited O'Shea et al document (reference "U" on the attached form PTO-892) provides

extensive insight into the meaning of “coherence” with respect to a light wave generated by a laser source. This document, cited for explanatory purposes only and not relied on as a basis for the rejection above, explains that it is relationships between amplitude and phase (of different parts of the light wave) that define coherence or non-coherence. Although, as mentioned in O’Shea et al, only a monochromatic light wave can be *completely* coherent, the Examiner believes that Danziger is operating with light waves having a single wavelength (i.e. monochromatic). Applicant’s argument regarding Danziger’s lack of coherency is thus not persuasive. Second, applicant argues that Danziger’s device does not produce an interference pattern for “exciting various modes” as claimed. Again, the Examiner disagrees with this assertion. See, for example, the discussion in Danziger in the paragraph bridging columns 8 and 9. The structure shown in Figure 20a causes an interference pattern to be created which results in a wavefront similar to that of the  $LP_{02}$  mode, which is clearly an excitation of the  $LP_{02}$  mode. Danziger goes on to teach (columns 9 and 10) that other modes can be created (excited) by modifying the structure slightly. It can thus be seen that Danziger does, indeed, “excite various modes” as claimed.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and an advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (571) 272-2351. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562, to the technical support staff supervisor (Team 2) at telephone number (571) 272-1564, or to the Technology Center 2800 Customer Service Office at telephone number (571) 272-1626.

  
**John D. Lee**  
**Primary Patent Examiner**  
**Group Art Unit 2874**